Reaction Paper

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I. Summary

I selected two papers: ”From Bitcoin to Bitcoin Cash: a network analysis” and ”From the Periphery to the Center:”. The first paper induces the Bitcoin network analysis and relevant techniques. The second one explores social network theory using the Bitcoin network as an example of the evaluation.

A. From Bitcoin to Bitcoin Cash: a network analysis

The paper investigates, analyzes and evaluates two types of network: the Bitcoin network and the Bitcoin Cash network, and their ’peer-to-peer’ structure. These two directed networks share similar topology with the proof-of-work algorithm. The nodes runs the Bitcoin P2P protocol and play as routers. When a new node joins the network, it connects with a pre-existing one randomly chosen. The generative mechanisms ’fittest-gets-richer’ and ’first-mover-wins’ model the evolution of the out-degree distribution. And a ’fitness based’ model is effective to describe the dynamics of two networks. The evaluation shows us in-degree/out-degree distributions and clustering coefficients of two networks. The paper also compares the average clustering coefficient with it in an E-R network with the same number of nodes and similar number of edges. The evalution used three data sets: April 2016 Bitcoin network with 7025 nodes, August 2017 Bitcoin Cash network with 963 nodes and December 2017 Bitcoin Cash network with 1454 nodes.

The Bitcoin network structure and the analysis in this paper are related to the topic of the course.

B. From the Periphery to the Center:

This paper explores social network theory with three aspects: the center periphery partition, social integration and network dynamics. The paper captures the process in which a newcomer builds ties with

an evolving network to gain maximal access of information in the network. Then, the paper proposed three cost-effective tactics, uset-based tactics, rset-based tactics and MUF. Their performance were evaluated on four four data sets: CollegeMsg network, Bitcoin OTC trust network and Cit-HepPh network and Trade network, and on four dynamic center/periphery network models: dynamic BA model, dynamic JR model, dynamic rich-club and dynamic onion.

Social network theory and the center periphery partition in the paper are related to our course topic.

II. Critique

A. From Bitcoin to Bitcoin Cash: a network analysis

Strengths: The paper induces network structure of Bitcoin and Bitcoin cash and gives us evaluation results of in-degree/out-degree distributions and clustering coefficients.

Weaknesses: The paper should have deeper analyses and investigations of two networks such as the evolution of stochastic processes.

B. From the Periphery to the Center:

Strengths: The paper induces social network theory and several tactics evaluated on some dynamic center/periphery models.

Weaknesses: The tactics should be evaluated on more data sets and models.

III. Further work

A. From Bitcoin to Bitcoin Cash: a network analysis

The further analyses and the investigation evolution of stochastic processes on the Bitcoin networks and the Bitcoin Cash networks are needed.

B. From the Periphery to the Center:

The paper remains future works:

- Dynamic models where ties are added as well as severed.
- A distinction exists between the notions of network center and core.
- Dynamic community structure models.
- Network formation game-theoretical models based on the notions of social capital.